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EDITED BY

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THE

CHICAGO MEDICAL EXAMINER.

N. S. DAVIS, M.D., EDITOR.

VOL. X. MAY, 1869. NO. 5.

Original Contributions.

ARTICLE XVII.

DR. MERRIMAN'S ADDRESS.

DELIVERED TO THE ALUMNI OF THE CHICAGO MED. COLLEGE.

BROTHER ALUMNI:

The constitution of our Society says, its first object shall be "to keep alive and perpetuate that kind and cordial feeling which binds us together by reason of our common *Alma Mater*"—which I understand to mean that we shall assemble here to have a good time; that we shall lay aside our pills, powders, and prescriptions, our saws, splints, and scalpels, our grave faces, and wise looks, and feel that we have so far conquered success, that we can afford for to-day to look around us and see what work we have done, not only individually, but collectively; that we can grasp each other's hands with hearty friendliness and congratulations upon the many successes the Alumni have had.

It is very pleasant to meet together as we are doing to-day—to see that *Alma Mater* is growing, as we perceive from the accession to our ranks of so fine a class as will to-morrow receive their diplomas—to meet many of our old associates, and to hear from others—how some of them are across the great waters, and some about to go, to pursue the same studies they commenced here so thoroughly—how others are winning for

themselves greenbacks, or laurels, or, better still, the love and gratitude of whole communities; so that to lose their doctor, or have any evil befall him, would be looked upon not only as a public, but, to each individual, a private loss.

Thus, the sons of our *Alma Mater* are growing in numbers, wisdom, and power; and the dear old Mother herself is not standing still. Within the last two years, four of her original faculty have added the value of an European experience to their previous thorough acquisitions, while three more have come to us fresh from those time-honored schools: and, not content with her previous requirements, *Alma Mater* is the first of American colleges to demand of her students three courses of lectures, and six months in each course, instead of the customary two courses, four months each, of sister institutions. With her progressive system, giving an entirely new course each year of the three, *our* college goes over nearly twice the ground of any similar institution in the country. The system adopted here is attracting great attention in Eastern cities. Professor Bumstead, in the "Introductory Lecture," at the College of Physicians and Surgeons, last fall, advised the students to choose from the course there given anatomy, physiology, chemistry, and materia medica, and to pay their attention chiefly to those studies the first year, and to the others the second year. Seeing, then, what she has done, and is doing, how proud we are of *Alma Mater* to-day; and I feel that each year as we assemble here we shall have new and greater cause for so pardonable a pride.

While we thus meet to revive old friendships and recollections, and to enjoy the social hour together, we ought not to forget to take home with us new determinations to work for the exhaltation of our noble profession, and to increase its usefulness. The success of one is an honor to all of us. Each new truth developed or old one made clear adds to the power of every physician, and gives the profession a stronger claim to the love and respect of the human race. Science has a claim upon each one of her votaries; and, as Sparta demanded that each subject should be a brick in her strong wall of defence,

so the great Genius of Medicine may say to each one of us,—"You must give me strength, or I shall become feeble."

Though some men have gone forth from our *Alma Mater* who are already wielding an influence, not only in their own locality, but upon science everywhere—still, our college is not old—few can *look back* to famous deeds; but the future opens to us, and—

> "As drops of rain fall into some dark well,
> And from below comes the scarce audible sound,
> So fall our thoughts into the dark hereafter;
> And the mysterious echo reaches us."

But those delightful echos from the unseen future, those dreams of high achievements, fame, and happiness, are not separated from us merely by a space of time; we cannot sit down at ease with any prospect of their being realized, nor will accident give them to any of us. Accident *sometimes* gives men a discovery which benefits the world; but, as a rule, the accident is merely the suggestion of a most thoughtful mind. The discovery of the pendulum and of the steam-engine required minds that could work out a great principle from events so common as to be scarcely noticed by ordinary men. Apples had fallen before human eyes for thousands of years before a mind like Newton's seized the suggestion, and deduced from it that wonderful law which binds the planets to the sun, and the great systems all in one.

We may safely lay it down, as a rule, that no man will accomplish anything to-morrow who does not accomplish something to-day. The surgeon who, in the future, will most creditably perform the great capital operations is he who, in the present, is most diligently preparing himself. In such an operation, the important moment to the surgeon is not when he takes his knife in hand, with the anæsthetized patient before him, but, rather, when in previous study he has gone over, *again and again*, every step of the operation, till he is as sure of it as the penman of his power to form a letter. If, then, we look for the causes of success, we shall find them in the early lives of successful men. Let us take a few examples of such

men, and see if we cannot draw from their early lives a lesson which, if applied to our own, will help us on toward the career we all desire. Demosthenes, the orator, inherited a most delicate constitution; but he overcame the defect by the most rigid temperance in food and drink, conjoined with a thorough system of exercise. He was troubled with a stammering speech and shortness of breath, which he overcame by the most incredible labor and perseverance. He shut himself up, for months at a time, to practice his beloved art, and copied the lengthy works of a noted author, whose style he admired, no fewer than eight times.

What American is not proud of the career of Benjamin Franklin, the printer boy, who became the eminent statesman? His father frequently repeated to him in boyhood:—"Seest thou a man diligent in his business, he shall stand before kings." He said he was reminded of this when at the court of France. His diligence in making opportunities, and in improving them when made, are too well known to you to need repetition. The man who could live upon saw-dust pudding and water *did not* need any man's patronage.

Sir Astley Cooper, though a wild and ungovernable boy, became, at the age of sixteen, a most indefatigable student of medicine. His diligence in anatomy was so great that he stood at the head of the class in the beginning of his second year; and, before he was eighteen, he was admitted to membership in the Physical Society—the oldest medical society in London. Entirely reversing his former habits, he spent his vacations in the closest study. He early became a teacher, and such was his professional zeal that, even on the day of his marriage, he gave his lecture in the evening, as usual. What result but success could follow such devoted labors?

Space permits me to cull merely a suggestion from these noted examples; but, through all the thousands that history records, we find this same precept enforced—"The hand of the diligent maketh rich."

I cannot resist the desire to mention one more example—that of one whom we have all learned to love for his large-

heartedness, and revere for his intellectual power and great accumulations of medical knowledge. It is unnecessary for me to mention a name; you will all recognize the man.

In early life poor, having hardly what is now considered a common school education, without influential friends, without opportunities, except such as he made himself, with, absolutely, no advantages, save a soul endowed with a determination *to do*, he began his career. Soon after, he graduated, the Medical Society, of New York, offered a prize for the best essay on "Diseases of the Spinal Column." He knew no more of the subject than the most recent graduate, but at once began to study it up; wrote the essay, and gained the prize. The next year, he gained another, upon "Discoveries in the Physiology of the Nervous System, since the time of Sir Charles Bell," in which were first mentioned many of the points that have since become generally accepted. Thus, he went on investigating new subjects, and writing new articles every year, always keeping on hand a list of obscure points for investigation. On removing to New York, he at once became Assistant to the Demonstrator of Anatomy, in the College of Physicians and Surgeons; and, while there, passed through the cholera epidemic of 1849. He remained but a short time in that city, and then came here. His history since, you all know—how from early morn till late at night, in storm and sunshine, in season, and out of season, he toiled and *succeeded*.

Although my description has been of only one man, he is but a type of our faculty. To their assiduous labors and enterprise, no less than to their intellect, do they owe their high standing in the profession.

Just here, the thought comes to me, "Who are are to take the places of the illustrious men of the present day, when they pass from the stage of active life?" Let each one of us ask himself—"May I not be among the number?" for each generation are offered the same prizes for the same endeavor.

The reason of most failures is, that men want a practice without earning it, and success without deserving it. He who is willing to pay the price of these things in labor and self-denial will surely gain them.

Work, then, first, to make yourself all you can be. Whatever else you do, don't neglect to grow. Remember that when you graduated, the close of the course was called "commencement," and not "completion." You were turned loose upon humanity as doctors; but with some little doubt as to whether you would prove destructive or not. "A little knowledge is a dangerous thing," you know; and those who rely upon what they gained at lectures only as sufficient will really prove dangerous. Our weapons are powerful for good or ill, according to the way they are used; and in an unskilful hand are always to be dreaded. I had rather trust a friend to the infinitessimals of true homœopathy than to the half-informed practitioner of the regular school; especially if he be heroic. Continue your medical studies; keep always on hand subjects for investigation, and study them; be an active member of medical societies; write for medical journals; always have a medical student, and be sure you instruct him,—for the surest way to learn a thing is to teach it.

Work, secondly, for influence, and then to use it aright. Physicians are becoming every year more and more men of weight in the community; and this will continue to be so as the profession becomes more advanced, and culture has more sway. Bring your influence to bear upon the prominent men, and the Legislators, that they may give correct votes on bills for legalizing dissections, and providing *materiel* therefor, also to pass laws restraining quackery, regulating practice and druggist's duties, and the sale of poisons; and urge your Medical Society to use its influence in the same direction.

Don't be discouraged at failure. The man who never failed is a myth; and, frequently, the men who have failed the most have become the most successful in the end.

It was a beautiful idea of the ancient Greeks—that classic people—to make Apollo God of medicine. Apollo, you remember, was God of the Sun—that symbol of life and peace and happiness. He was also God of music, which, among them, included all kinds of culture. Æsculapius was a kind of patron saint of physicians; but the real God of medicine was he

who united in himself manly grace and beauty with genial ways and the highest culture, of all the heathen divinities, the one who would to-day be called the truest gentleman.

Let us from him, too, draw our lesson; and, with all medical knowledge, mingle the kind disposition, the agreeable manners, and the general culture of the gentleman: but let us lift ourselves higher than to be merely disciples of Æsculapius or Appolo; and, as Christianity is higher than heathenism, let us rather be followers of Him who is the grandest model of all virtues, and who alone is called the "Great Physician."

ARTICLE XVIII.

THE BROMIDES.

AN INAUGRUAL THESIS, PRESENTED TO FACULTY OF CHCAGO MEDICAL COLLEGE, 1869.

By THOMAS G. WILLIAMS.

The bromides constitute a numerous and an important class of compounds. As medicinal agents they have of late attracted an unusual degree of attention. Although many of them are of great value, but a few have as yet been sufficiently investigated to justify us in feeling that we know much with regard to their medicinal efficacy. Those which have most attracted and are now attracting the attention of the profession are the bromides of sodium, potassium, ammonium, and to a certain extent quinia. With regard to the first three mentioned, the bromide of sodium is generally considered by all observers as of much less efficacy than the other two; and for this reason we will give it but little attention. The bromide of quinia has been tried in a few instances with apparent success; but as yet only a few observations have been made, and all that can be now said about it will be mere conjecture. As to the bromides of potassium and ammonium this is not true, for they have been used extensively, and many careful and comprehensive experiments have been made on them.

The bromide of potassium seems to be the favorite article in all the recorded observations, but for what reason I cannot tell. I am satisfied that the bromide of ammonium is the more useful as well as the more pleasant of the two, and deserves greater attention than is usually given to it.

After careful trial of the two, in many different circumstances, I do not hesitate to say that as a remedial agent it as far surpasses the bromide of potassium as the latter does the bromide of sodium. Why this is so I cannot explain, except in the same manner as some attempt to explain why the bromide of potassium is more efficient than the bromide of sodium. They say that the salts of potassium are all more efficient than the corresponding ones of sodium, therefore the bromide of potassium is the more powerful. For a similar reason the bromide of ammonium is more powerful than the bromide of potassium. We know from experience that most of the salts of ammonium are more decided in their effects than the corresponding ones of potassium. A good understanding of either of them, however, will suffice as a standard with which to judge the others; for they are similar in action, differing only in degree.

It has been a matter of considerable discussion whether the action is peculiar to the combination or to one of the elements. Some think that the base is the active ingredient, others that bromine is, while the majority of writers conclude that the salt as such, is the agent which produces the peculiar effect. Who ever saw any of the other salts of potassium or ammonium produce the effects derived from these under consideration; or who ever thought bromine produced such effect? It seems to me to be impossible to account for the phenomena produced when these salts are given, except to ascribe to them, as such, the peculiar virtue. Dr. Bill claims that double decomposition takes place with chloride of sodium as soon as it enters the blood, and that we virtually give bromide of sodium, which he regards as a substitute for chloride of sodium, with a chloride of the base given. This statement no one can hardly believe, after he has fairly studied the matter. We shall be better prepared to see the error of this statement as we progress.

We may, I think, without doubt regard the salt itself as the active agent, and that it continues as the salt given until its elimination from the body.

The thing to be done, now that these points are settled, is to find out how they act and the manifestations of their action. How do medicines act? This is a question yet unanswered; but the manifestations resulting from their actions are capable of being studied and described. It is not an easy thing to observe and to describe rightly these manifestations, as we may readily infer from the variety of opinions held concerning the different articles of the *materia medica*. This we shall see to be specially true with regard to the subject under consideration, before we have finished.

Most views entertained concerning the manner in which substances act when given as medicines, or taken in poisonous doses, have been extremely vague and unsatisfactory. They are often regarded as warriors, intelligent and ready to battle with and drive out of the system whatever does not belong there. Our text-books are so written that a student, in studying them for the first time, unavoidably comes to entertain these absurd views. It seems as though men dare not investigate this subject, but feel satisfied in believing that it is beyond the human power to explain. But this feeling is fast wearing away as organic chemistry unfolds to our observation things before inexplicable. Great minds are becoming unsatisfied with the old theories, and are looking about them for explanations in accordance with fixed and known physical laws.

Some writers have hinted that the bromides are efficacious, from their property of diminishing metamorphosis of tissue; a few claiming that it exercises no elective action, while others claim that it does, acting only on nerve tissue. McElroy has written a very ingenious article on this subject. It deserves a careful consideration at least, for I think it opens up a new course of investigations, even if the views therein contained are not true. He recognizes two grand processes as going on in the system, and terms them nutrition or constructive metamorphosis and oxidation or destructive metamorphosis. Medi-

cines, he says, may promote or retard either of these processes, thus giving us four classes of action to study. To illustrate, he says that chloroform arrests oxidation; strychina promotes it; calomel retards nutrition, and promotes oxidation. The bromides, he further says, owe their effects to the property of promoting the oxidation and consequent elimination of effete material, or that which is below the natural standard of development. He claims that these views are true beyond a doubt. How true they may be I am not prepared to say; but this I do know, that he has done much towards explaining how medicines should be studied. It will be impossible to say at present how the bromides do act; whether it is, as the ancients believed and indeed some of the modern observers as well, that they act as an intelligent creature, driving out the disease, or as a catalytic agent, acting by its mere presence; whether it diminishes metamorphosis of tissue, or whether it is in the manner explained by McElroy, which we have just noticed. But this we do know, that they act somehow, and give rise to peculiar manifestations, and are often of inestimable value to the physician in the cure of many diseases.

We will devote the remainder of our attention to the study of these effects. It might appear at first thought that this is easy. But we shall find, as we progress, that it is not so simple after all. There are many things, in the way of making observations, which will lead to the same conclusion under different circumstances. Our physiologists are so various in their views of life action that no real standard can be chosen from which to judge. The terms used by different observers are not understood alike by each. The circumstances under which experiments are conducted vary the results to a great extent. Indeed, it is not to be wondered at that men differ greatly, when we take everything into consideration.

Having derived splendid results from the use of the bromides, I was led to investigate the views entertained by different ones in regard to them. Though recently brought into notice, they have attracted very great attention. I was somewhat astonished at the variety of opinions adduced by different in-

vestigators. In order that we may the better reach the right conclusion, which we must do or our prescribing will be but mere empiricism, let us examine the conclusions reached by some of the best observers.

Eulenburg and Guttman, German observers, after elaborate experiments on frogs and some of the other lower animals, conclude that it (the bromide of potassium) is rapidly absorbed into the blood, that it is an intense cardiac poison, and that it paralyzes muscular and nerve action. Nervous and muscular irritability are both destroyed by its prolonged use. Its therapeutic action is anti-spasmodic, anti-convulsive, and anæsthetic. It has no direct hypnotic or narcotic action.

Ladorbe, a Frenchman, thinks that it acts only on the spinal cord, diminishing especially reflex action; that it has no effect on the circulation, mental action or sensation. Voluntary motion remains unaffected.

Damourette and Pelvet believe, as those above, that it acts through the circulation. They claim that it has no elective action, but that it acts on all tissues alike. The action is sedative, and is produced by direct contact. Nerve force yields most readily and heart action last. Therapeutic action is anæsthetic and a general sedative, acting specially on no particular function, but on all alike, and that by actual contact. Brown-Séquard terms it a nerve sedative, having no special influence otherwise. He says that it is indicated only where a sedative effect on the nervous system is required.

Bartholow, of Cincinnati, regards it as a powerful irritant to mucous membrane of the stomach and a vascular and nerve sedative. Therapeutically it is a disinfectant, escharotic, hypnotic, and sedative; but not indicated in cerebral congestion. Dr. Begbie, of Georgia, thinks it is a nerve sedative and a hypnotic, useful only in diseases of nervous origin. Dr. Bill, U. S. A., has made several series of investigations to decide on its physiological effects, and some of his conclusions are interesting. As before noticed, he says that we virtually give the bromide of sodium, which is powerless as a remedial agent. His conclusions are, that only the peripheral nerves of mucous

membranes are affected in the least, for as soon as it enters the blood it is changed into two powerless salts by double decomposition. If we gave sufficient to neutralize the chloride of sodium, we might get the peculiar effect of the bromide elsewhere from its local action. We get its peculiar action on the digestive tract and also on the urinary apparatus. It does not appear to me how this is possible, from his description, but it does seem that he has complicated things considerably. His article is long, but contains many peculiar inconsistencies. For instance, he speaks of its diminishing the elimination of carbonic acid gas, but as not affecting its formation in the system. It therefore acts as a soporific, by virtue of the retained carbonic acid gas. He also speaks of its peculiar action on the urinary organs, as well as many other things, which compel us to ask how this is possible, since none enters the circulation. It cannot be the effect of the bromide of sodium, for he tells us that this salt is like the chloride of sodium in its effects. As for the chloride of potassium, we know that it has no such effect. Thus we are almost compelled to doubt the truthfulness of his deductions, from the incongruities he has produced. However, in view of all this there is much practical information to be derived from the study of his article. The views of many others might be produced, if it were necessary. However, I think that I have noticed a sufficient number to enable us to form an opinion of the obscurity in which we are left when we seek an explanation of the "*modus operandi*" of the bromide of potassium, from the literature of the present day. We have seen that much difference of opinion exists. Some will say unhesitatingly that we get only a local action on the peripheral nerves of digestive and urinary tracts; others that it has a special action on nerve centres, or that the spinal cord is affected, or the nerves of sensation, excito-motor or vaso-motor nerves. Some say that it makes no distinction with regard to the tissues it selects; and in fact we may say that all manner of opinions are extant, even to saying that it has no effect at all. I could not be satisfied from what I could find by reading, so I determined to make observations for myself.

In order to make no mistakes and to avoid some of the sources of error, I made several experiments both upon myself and upon others. The results were so similar that I do not think it best to enter into a detailed account of each, but to produce what will be of use to us in this investigation. My first object was to find the effect of its prolonged use on the secretions, nutrition, and nervous system. From my reading I was led to think that circulation was but little, if at all, affected. I therefore had made no preparation for observing the effect on circulation and temperature. Some claim, also, that the effect is rendered peculiar, by the amount given. Not believing the notion that some advocate, of the different results derived from medicines when given in large or small doses, I made observations in order to satisfy myself on the action of the bromides in this respect. I found only a difference in degree of action between large and small doses. I do not understand why such a notion has become so common with our profession. We have various articles, for instance, which in small doses are called stimulants, but in larger doses they are called sedatives. I think it must be that we do not know what constitutes stimulation and what sedation. However that may be, we get a similar effect from the article under consideration under all circumstances, differing only in degree. The article which I used was manufactured by Powers and Weightman, Philadelphia. I took 10 and 15 grains three times a day for a considerable time. The results were so much like the following that I will not notice them here. When I had fully recovered my normal condition, I commenced taking ℈ij. 4 times a day and carefully noted the effect; and also had myself carefully observed by Dr. Cooper, in order that nothing might escape observation that would aid me in forming my conclusions. The urine was increased in quantity 3 or 4 ounces during the 24 hours, but the specific gravity was lowered 2 or 3 degrees as tested by the urinometer. Detected bromine in it within the first hour, but cannot say unhesitatingly that it was there in combination with potassium or whether with sodium, as Dr. Bill will have it. I think, however, that he is mistaken in regard to this as well

as in other things in his article, and that we may regard it as being there in the form of bromide of potassium, but did not demonstrate the truth by experiments. I did not make a quantitative analysis of the urine, therefore am unable to produce anything that would be interesting on this subject. Dr. Bill has done so, but I do not think his observations are sufficiently reliable to justify us in adopting them without further investigation. I will, however, notice a few of them in this connection. The chlorides, he says, are greatly increased. Soda is increased and potassa diminished. Uric acid increased; urea not affected. Urine higher color. I did not find the latter true in any of my experiments, but on the contrary a diminution of color. He says further that the elimination of carbonic acid from the lungs is retarded, but its formation is not interfered with. He thinks that some vital cause is the reason for this diminished excretion, and that it is confined solely to the pulmonary mucous membrane. The soothing effect of the bromides he ascribes to the retained carbonic acid. He claims that a constipating effect is produced. I observed no special effect in this direction. I noticed that the appetite seemed keener for the first few meals; subsequently a peculiar change takes place. It is difficult to describe the change, however, for it cannot be said that a disrelish follows, but more of a carelessness in regard to eating. The sensation of hunger is not noticed; but when we sit to a meal it seems that as much can be eaten, yet without producing the usual feeling of satiety. Digestion is carried on apparently as well as ever, and no unpleasantness in the least follows a hearty meal. We conclude that the effect on digestion is to diminish the desire for food, the power for taking and assimilating remaining unaffected. The muscular system seemed relaxed and incapable of being used with the usual vivacity. I think, however, that this is not so much from the effect on the muscular system as upon its vital stimulus, the nervous system. I feel satisfied that the contractile property of muscle is but little, if at all, affected. We shall see more on this point as we progress. The cutaneous system is so affected that I am led to believe that it also affords

a channel for elimination of the bromides. After one of the experiments, a very painful carbuncle came upon the back of my neck, which suppurated scarcely any. I cannot say that it had any connection with the taking of the bromide, yet I noticed at each subsequent trial that a peculiar little boil would show itself near the site of the old seat of trouble. But slight suppuration took place in any of them. There was a minute slough in each one, and the lymphatic glands were swollen and very painful in the region of the boils. I have observed this only on myself, and consequently cannot say that this was the result of the medicine. I believe, however, that these were from the effect of the large quantity taken, for the inflammations were peculiar, having never noticed anything like before; and they disappeared when I left off my experiments. But another affection presents itself as regularly as its use is persisted in. It is a minnte vesciculo-papular eruption, which causes an intense itching and which does not disappear for a considerable period after discontinuing the bromides. I infer from this that it finds exit through the skin, as well as the kidneys, and acts as an irritant to the sudoriferous glands.

During these experiments I became satisfied that the circulation was materially affected, and I made a special series of observations for the purpose of determining its real effect on temperature and circulation. The results I will produce further on. In regard to the effect on the nervous system, I must acknowledge the great difficulties to be overcome and the almost utter impossibility of being certain in the observations made. Even if one feels certain himself, he lacks the means of making it mechanically manifest, as can be done with the temperature, circulation, etc. Of all the systems we have yet noticed, the nervous was most impressed; indeed, I am of the opinion that this is the part primarily affected, but the results of the nerve change are variously manifested. The nerve tissue is endowed with certain properties which it will be best to notice before discussing the influence exerted on them. In common with other tissues, it contains the primary properties susceptibility and vital affinity; also properties peculiar to

itself, impressibility and transmissibility. We have to do more especially with the last two named. The important relations which these properties sustain to the system at large make them objects of unusual interest, and need to be well understood. A slight impression on one or both of these properties has a great effect on the vital economy. Thus, through its receptivity or impressibility, the nervous system is made cognizant of the wants of the entire organism, and through the property of transmissibility it responds to the various calls upon it.

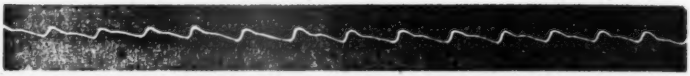
The functions of the nervous system are so various that it will be wholly impossible to notice them all. The receptivity of my nervous system was considerably diminished. Injuries were more easily borne, and the effects of heat and cold were not so easily noticed. Indeed, there was nothing that pertains to this function which was up to the normal grade of acuteness. As before noticed, the desire for food and drink appeared lessened, yet they were present, as the power of partaking and the relish felt for them will testify. A peculiar feeling of fullness of the head was present each time, but it was not an unpleasant sensation. No headache was present during any of the time, but on the contrary the usual causes failed to produce any. Study I could not, nor had I the faculty of concentrating my attention on anything. The best lecture would be but partly noticed. Memory for some reason was less reliable than normal, but I do not think it resulted from anything except the lack of ability to fix my thoughts. My feelings were what some would term pleasant, for I cared but little what transpired about me. The excito-motory nerves have their transmissibility diminished, which I think accounts for the muscular relaxation which was present. The sensory nerves are also diminished in their power of taking impressions. The secreto-nutritive nerves of Brown-Séquard I think are also more or less diminished in their function. I could not demonstrate this to my own satisfaction, however. I infer this more from the condition of my appetite and the long continued relaxation of habit, which remains after the bromides have been left off. Some claim that

the reflex action of the cord is alone affected, but I am satisfied that the action is more general, as regards the nervous system. Its soporific effect has been greatly overestimated by some. I have never been able to find that it compels sleep like morphia. Still I have seen sleep follow its use, where morphia had failed entirely. It is true that when I was taking large quantities I could sleep when I pleased, and so long as I pleased; still I could, by an effort of the will, overcome the desire, and when asleep could be easily awakened. When I was awakened from such a sleep, my mind would be as clear as before sleep, and the desire to fall asleep again could be easily overcome. We see that it differs much from morphia and its allied products. They compel sleep, in spite of all opposition, when given in sufficiently large doses to produce their specific effects, while the bromides permit sleep. They calm the person if excited, or diminish his power for thought and for fixing the attention, and sleep follows as a consequence. Its anodyne properties have also been overestimated. This, like sleep, is only produced secondarily.

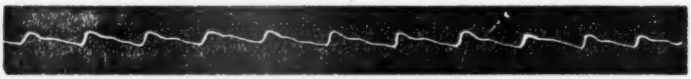
But the great point which prompts me to record these observations, and which I think will account for the action of the bromides better than any opinion yet produced by observers, remains to be noticed. I refer to the effect on circulation. I was unprepared, from my reading, to believe that such an effect was produced. All observers, nearly, either overlook or wholly deny that it has an effect on the circulation. One or two have hinted that some effect is produced, but have left it unexplained, so far as I know. Feeling certain that an effect was produced on the circulation, I procured a Marey's sphygmograph to see how it was affected. I also used an axillary thermometer to take observations on the temperature. I found out that the relation between large and small doses holds true in regard to circulation. In order that the result would be more manifest, I made use of pretty large doses, though not larger than are often given medicinally. My general health was good when I commenced the experiment which I will now

record. My normal temperature is 98½°, pulse 78 to 80 per minute. I had noticed that my pulse was frequent for a considerable length of time, and waited for it to reach its normal frequency. Not appearing to change any and being normal in all respects except in frequency, I did not see fit to wait longer. I made other interesting observations, but will record but one in full.

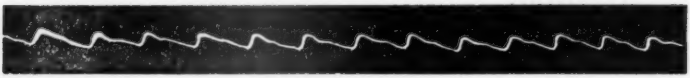
This experiment was commenced on Jan. 1st, 1869, and was continued through four days. Temperature was taken under the tongue, by Teiman's thermometer graduated to ¼ degree. The following are the delineations:—



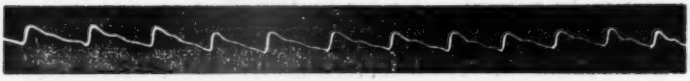
No. 1.—January 1st, 11 A.M. Pulse, 90; temperature, 100¼°. Normal.



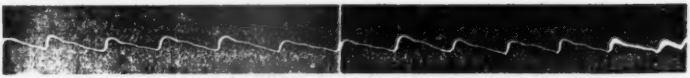
No. 2.—January 1st, 11 15 A.M. Pulse, 88; temperature, 100°.



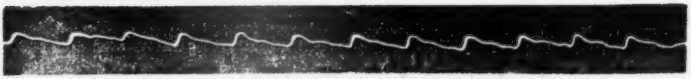
No. 3.—January 1st, 11 30 A.M. Pulse, 85; temperature, 100½°.



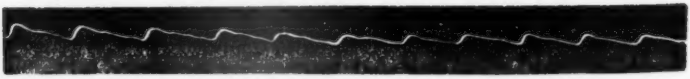
No. 4.—January 1st, 11 40 A.M. Pulse, 80; temperature, 100°.



No. 5.—January 1st, 11 50 A.M. Pulse, 79; temperature, 100°.

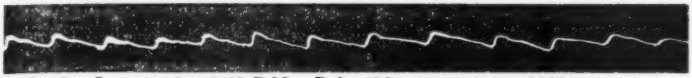


No. 6.—January 1st, 12 M. Pulse, 78; temperature, 100°.

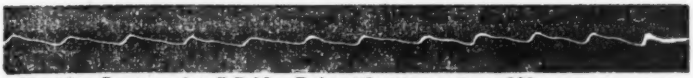


No. 7.—January 1st, 12 15 P.M. Pulse, 75; temperature, 100¼°.

No. 8.—January 1st, 12 45 P.M. Pulse, 74; temperature, 100°.

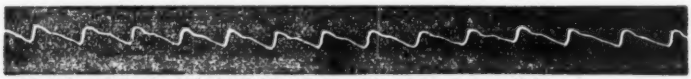


No. 9.—January 1st, 3 45 P.M. Pulse, 82; temperature, 100°.

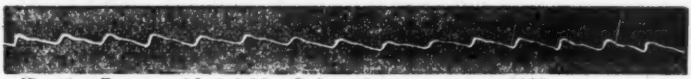


No. 10.—January 1st, 7 P.M. Pulse, 75; temperature, 99°.

No. 11.—January 2d, 1 P.M. Pulse, 80; temperature, 98¾°.

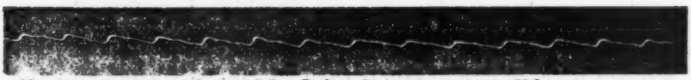


No. 12.—January 2d, 10 P.M. Pulse, 83; temperature 98½°.

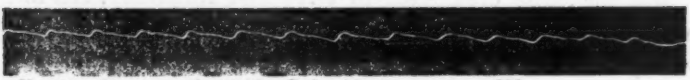


No. 13.—January 3d, 8 A.M. Pulse, 92; temperature, 98½°.

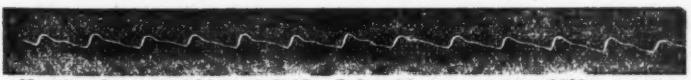
No. 14.—January 3d, 10 P.M. Pulse, 70; temperature, 98¼°.



No. 15.—January 4th, 8 A.M. Pulse, 90; temperature, 97°.



No. 16.—January 4th, 12 M. Pulse 90; temperature, 97°.



No. 17.—January 4th, 12 15 P.M. Pulse, 90; temperature, 98½°.

The amount which I took was ℥ss., four times a day, for four days. The last four doses were bromide of ammonium. I took the first dose immediately after impression No. 1.

It is necessary to explain each of these separately, or mistakes are sure to be made. The sphygmograph delineates the volume and frequency, but the delineation of force is apt to mislead, and the deception can hardly be avoided except by a close watch through feeling the pulse, in addition to delineations, and noting carefully the condition under which each one was taken.

No. 1, which is an impression of the pulse unaffected by anything except ordinary exercise, shows a firm and a moderately full beat, with considerable frequency. If we compare the succeeding ones, taken during the effects of the bromides, we cannot fail to observe the difference. Nos. 4 and 16, when compared with No. 1, show a great difference.

The first eight were taken without removing the instrument, and extend through two hours and three-quarters; and we obtain very uniform results, especially with regard to frequency of pulse. The temperature appears to remain unaffected at first, but from prolonged use it becomes decidedly lowered. At first glance one might notice a want of uniformity in the results; still, as we shall see presently, the strictest uniformity prevails throughout. At first it has an apparent stimulating effect, as shown by numbers 1, 2, 3, and 4; but let us examine more closely. The volume of the pulse, it is true, is greatly increased, but it is at the expense of firmness. Instead of a firm, sharp stroke, we have now one which is soft and compressible. The amount of blood which passes by a given point, in a given time, is less in No. 4 than in No. 1. Thus we have at first the pulse diminished in force and frequency, and increased in volume. From No. 4 to No. 8 the force and frequency continue to diminish. No. 8 compared to No. 1 does not show a very great difference of delineation; yet they are impressions of very different conditions of the circulation. No. 8 is compressible and has a difference of 16 pulsations per minute. Numbers 11, 15, and 16 are those taken after a period of rest. They are exceedingly soft, especially Nos. 15 and 16. We notice quite a change in temperature towards the last, it having diminished from $100\frac{1}{4}°$, as shown by No. 1, to 97°, as

shown by No. 16. Numbers 9, 10, and 13 show the effects of moderate exercise on the circulation, when compared with those taken after a period of rest; while Nos. 12 and 14 are impressions of pulse taken after violent exercise. They indicate a labored action of the heart, as it endeavors to supply the wants of the system, yet they too are soft and easily compressible. I thought it would not be safe nor discreet to carry the effects farther than is shown in No. 16. In order to see the effect of a diffusive stimulant in this condition, I took ar. spts. ammon. and tr. camph. āā ℥ss. immediately after taking impression 16. Without having removed the instrument, I took impression 17 fifteen minutes after the stimulant. A very great change took place during this short time. The temperature raised one and one-half degree, while the pulse became quick, firmer, and irritable. This stimulating effect continued to increase for a considerable time. My head ached very severely as soon as I commenced getting under the influence of the stimulant, and continued aching until I took a good dose of bromide of ammonium. The subsequent delineations were of no unusual interest. They showed an increase in the force of circulation. My head never ached before, when I left off the bromide. I would gradually come out from under its influence, not feeling natural in less time than one week.

No one can say, after having carefully noticed these results, that circulation is not affected by the bromides of potassium or ammonium. I am aware that some will say that this will not be sufficient to base any conclusions upon. Anticipating this objection, I made various observations on different individuals, and the same result followed in all cases. This does not arise from any idiosyncrasy of mine, but is the uniform effect of the article in all cases. As regards preconceived notions, I can say that my conclusions are in no way affected by them. If I had any notions whatever they were all overturned in this investigation.

Now it is necessary to find out how this effect on the circulation is produced. I believed at first that the muscular coat of the arteries had its contractility diminished and that the effect

was produced in this manner; but subsequently I became satisfied that if it was at all affected it was but to a slight degree. This I think is proved by the effect of stimulants and exercise, as shown in Nos. 12, 14, and 17. The vaso-motor nerves preside over circulation by bringing nervous influence to bear on the muscular fibre of the vessels. The walls of the vessels are highly elastic, and the contractility exactly corresponds to the dilatibility under ordinary circumstances. This property aids very greatly in aiding circulation. The arteries are distended by the vis a tergo of the heart, and the pressure of this blood affords a stimulus to the vascular coats causing them to contract, thereby sending the blood forward in its course. The heart is also endowed with the same property, but owing to its great power it will not succumb so readily as the arteries to agents which act upon them. Remembering these facts, it can readily be seen how such a condition of the circulation is produced. This can be produced in various ways: for instance, if the property of contractility is diminished, or the impressibility or irritability of the walls is lessened, or if the motor nerves have their function diminished, the same result will be produced.

In this case we have to do more with the nerves distributed to the vessels than with the vessels themselves. The power to respond to a stimulus remains in the arteries and heart, but the nervous supply is materially diminished in its function. The smaller arteries have much to do in the propulsion of the blood and in regulating the supply of blood to different parts of the system, by virtue of their muscular coat. Very many diseases are much influenced by this property of the arteries. In their normal condition the dilatation of their walls by the blood, which has been propelled forward by the heart, causes a corresponding contraction. This contraction differs from that which we find in the larger arteries and in the veins, on account of the muscular fibre contained in the coats of the smaller arteries.

The bromides change the action of these arteries, so that it more resembles the action of a vein, being merely a passive channel. We can see this beautifully shown in the first 8 de-

lineations. No. 2 shows how soon the dilatabilility is increased, but the contractility is but little weakened. No. 4 is the last one which shows that contractility still acts equal to the dilation. After this we see a manifest lessening of the contractile power. During rest we see, as shown by No. 16, that the contraction is nearly absent, leaving the artery in an almost passive condition.

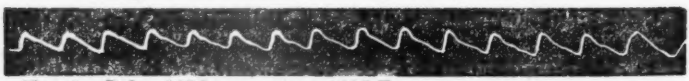
This will explain much of the efficacy of this article in disease, as we shall see further on. The surface of the body has a red flush all over, owing to the quantity of arterial blood which distends the smaller arteries and the capillaries. The difference between this condition and venous congestion is very marked; still the color is not that given by thoroughly oxygenated blood, owing to the tardiness of the circulation, which prevents it from being brought to the lungs sufficiently often. This causes a peculiar sense of fullness in the head, which is not at all unpleasant. I believe with Dr. Bill that there is also an excess of carbonic acid retained, still I do not believe as he does that the calmative property is owing wholly to this carbonic acid. I do not doubt that it has some effect in this direction, probably similar to that produced in an illy ventilated or crowded room.

In summing up the results of my investigations, I conclude: that it is the combination which causes the peculiar action, and not the bromine or the base; that it is quickly absorbed into the circulation and acts through the blood; that it is not decomposed to the extent claimed by Dr. Bill; that it produces an effect in a very short time after it is taken, and this effect is somewhat prolonged; that this effect is not dangerous within certain limits; that the primary effect is on the nervous system, diminishing all its functions somewhat, though more powerfully affecting its excito-motor and vaso-motor properties; and that through this influence on the nervous system the circulation, motion, sensation, mental action, etc., etc., are more or less affected, though not to an equal degree in each case.

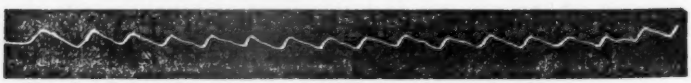
With what we have learned of the action of the bromides in the healthy condition, we can more intelligently study the

"rationale" of their action in disease. Owing to the want of a proper knowledge in this respect, they are in danger of becoming unpopular, as too often happens with new remedies. They have been highly recommended in diseases where they can be of no earthly use, and even where they are contraindicated. By wisely discriminating, we shall find the bromides of great value in very many diseases. However, if given alone they are rarely curative like the iodide of potassium, etc., but act only as palliatives. We shall find them of great temporary benefit in all spasmodic affections, from terrible hydrophobia to the merest muscular twinge; also in all cases of nervous excitement, from maniacal delirium to the wakefulness of the hard thinker; but in no case will they act as curative except where the exciting cause is temporary. We should not rely on them wholly in such diseases as hydrophobia, puerperal convulsions, cholera, epilepsy, etc., where the cause will not be exhausted in a short time of itself; but to allay the spasmodic symptom of these diseases we have no article comparable to these; but in delirium tremens and those diseases in which the cause will soon become extinct we can rely on them alone. What has been said with regard to the muscular coat of arteries is equally true with regard to the muscular coats of the various ducts of the body; for instance the renal, the biliary, the ejaculatory ducts, etc.

We have far more potent anodynes than these, though they do blunt the sensibility to a certain degree. In this connection I will produce two sphygmographic delineations in order to show how a very irritable, quick pulse is affected. The subject was laboring under a subacute attack of pneumonia:—



No. 1.—Pulse, 102; temperature, 100° F.



No. 2.—Pulse, 120; temperature 100°, three hours after No. 1.

No. 1 was taken to see the condition unaffected. I then gave bromide of ammonium ℈ij. In three hours No. 2 was

taken. No. 2 has lost the irritability present in No. 1, being soft, frequent, and compressible. The person felt no effect from the dose. It will be profitable to examine the manner of their action on a few special diseases. It has become very popular, and that with good reason, in the treatment of that terrible disease, epilepsy. Some have been greatly disappointed, however, but it resulted from not remembering or knowing that it has only a palliative action and that if the cause of the convulsions is not removed they will return so soon as the effects of the bromides have passed off.

Much difference of opinion has existed with regard to the pathology of this disease, and I think the opinion generally held at present is very much out of the way. It can be proved beyond a doubt, I think, that epileptiform convulsions of every variety are caused by a sudden anemia of the brain and spinal cord. There is a great variety of these convulsions, which are reducible to this class. Puerperal convulsions are but an attack of epilepsy under peculiar circumstances. Rigors, etc., are caused by anemia of the spinal cord. Now this anemia is caused by a spasm of the arterioles, distributed to the brain and cord.

We can easily see now how the convulsions and rigors are prevented by the bromides. In them we have nearly a specific for delirium tremens. In this disease we have the circulation irritable and the blood very deficient in nutrition. Now by retarding the flow of arterial blood it imparts to the brain more nourishment than it would if hurried, as it really is, during the excitement of the disease. Where it is superior to opium is in the fact that it causes arterial congestion, whereas opium causes venous congestion. We can easily see the advantage and find an explanation why it so often causes sleep in this disease when morphia has failed. It requires no explanation why it is useful in the passage of renal and biliary calculi; how it prevents seminal emissions, chordee, etc.; why spasmodic croup, asthma, whooping-cough and like diseases are so greatly relieved by the bromides.

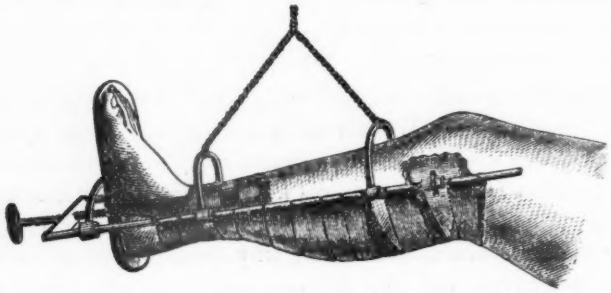
How well I may have succeeded in convincing others of the

truthfulness of these conclusions I cannot tell; but I feel satisfied in my own mind that they are the only views that have afforded a good explanation of the effects of the bromides in disease. I have been well repaid, by the satisfaction I derive from being now able to view their effects in a rational aspect. I do not think that I have claimed more for them than facts will allow. If this meets the approval of my medical brethren, well; but if it does not, all that I ask is that some one produce something better as an explanation, and I will be ready to give up these views. Until then, I can but regard these views as affording the true explanation of the action of the bromides.

ARTICLE XIX.

A NEW FRACTURE APPARATUS.

A new dressing for fractures of the leg has been devised by Dr. E. D. Kittoe, of Galena, late medical inspector U. S. A., which, on account of its convenience and capability of being made by an ordinary mechanic, is deserving of commendation. It consists of two steel or iron rods a quarter of an inch in diameter and thirty inches in length. These are connected by a cross-bar at one end and by two sliding semicircles intended to go over the front of the leg. The accompanying engraving will illustrate the form:—



A foot-piece of wood sits between the rods, and is suspended to a steel semicircle by a clamp screw, so as to allow of its

being turned in any direction, and also drawn to and fro on the rods, which are loosely clasped by the semicircle. The foot of the patient is attached to the board by adhesive straps either passed around the foot itself, or up the sides of the leg, as shown in the engraving. Through the cross-bar at the end of the rods passes a screw ten inches long, which is attached to the foot-piece by a swivel joint. By these means the foot-piece is drawn down, making extension with any desired force. The counter-extension is made by two broad, thick pads, attached near the upper extremities of the side rods by clamp screws, so that they can be adjusted to any necessary length. These pads press against the bulge of the tibia on each side, just below the knee, and may be fitted to variable sizes by extemporized pads placed under them, thus making effectual counter-extension. The limb is supported between the rods by passing a bandage to and fro beneath it exactly in the manner of Smith's Anterior Splint; and the whole is then suspended by a branched cord to a hook in the ceiling, or to a wire arch under the bed-clothes. The branched cord is of course attached to the two sliding arcs which attach to the rods, as seen in the wood-cut.

The only cases where this splint cannot be used would seem to be those in which there has been contusion about the knee, so that the patient cannot tolerate the pressure of the counter-extension pads; but even in these cases it would have all the advantages of Smith's Anterior Splint, while in all other cases it adds to the merits of Smith's apparatus the benefits of perfect extension and counter-extension. It is a great comfort to a patient to have the free motion of the limb allowed by suspension, without losing the advantage of extension, or risking the displacement of the bones. Both these objects are gained by Dr. Kittoe's apparatus.

EDMUND ANDREWS, M.D.

81 Monroe St., Chicago.

ARTICLE XX.

THE OXYGEN MIXTURE AS AN ANÆSTHETIC.

By E. ANDREWS, M.D., Prof. of Principles and Practice of Surgery in Chicago Medical College.

Some months since I gave in the *Examiner* an account of my experiments in the use of a mixture of free oxygen and laughing-gas as an anæsthetic. Special circumstances interrupted for a time my investigations, but the following recent case will serve as an additional example of the action of the mixture:—

Mrs. W. had a fatty tumor on the back of her neck, which she wished removed at her residence. The mixed gas was accordingly carried there in a rubber sac and administered by Dr. Rogers. The inhaler was a silver mouth-piece inserted between the lips, and spreading between the lips and teeth so as to allow of no admixture of atmospheric air. Valves allowed the inspired gas to come from the sac, and the expired air to pass out of an opening into the atmosphere. Thus being prepared, the inhalation commenced. In seventy-five seconds the patient was anæsthetized, presenting a sort of pallor of the lips and slight blueness of the veins, but none of the dark asphyxiated flush and labored breathing produced by unmixed laughing-gas. I proceeded to extirpate the tumor, occupying two minutes in the operation, which I accomplished without any consciousness on the part of the patient. The inhaler was then removed from the mouth, and the patient recovered her senses in about two minutes, waking up pleasantly, without nausea or discomfort. The blood from the incision was a little darker in tint than usual, showing that there was not quite free oxygen enough in the mixture.

Chicago, No. 81 Monroe St.

Original Translations.

THE PHYSIOLOGICAL ACTION OF THE SULPHATES OF POTASS, SODA, AND MAGNESIA WHEN INJECTED IN THE BLOOD.

By MM. F. JOLYET AND CAHOURS.

Translated for the *Medical Examiner*.

We propose in this article to demonstrate—

1st. That the neutral salts (sulphate of soda and sulphate of magnesia) which are daily employed as purgatives in the intestine do not produce purgation, when injected in the veins.

2d. That these same injections enable us to distinguish the sulphates of potass, soda, and magnesia by their poisonous properties, and their physiological effects.

Physiologists frequently have injected the different salts of potassium and sodium in the blood, for the more special purpose of distinguishing these two alkaline metals by their poisonous properties. The most delicate experiments on this subject have been made by M. Grandeau. (*Vide Journal de l'Anatomie et de la Physiologie, etc.*, by M. Ch. Robin, 1864: Experiments upon the Physiological Action of the Salts of Potassium, of Sodium, and of Rubidium.) They show—

1st. That the salts of soda can be introduced in the circulation without producing accident, and that very large doses do not lead to fatal results.

2d. That the salts of potass, injected in the blood, are eminently poisonous, and that very minute portions suffice to produce a frightful death.

The experiments of M. Cl. Bernard have taught that the salts of potass direct their action upon the muscular tissue, and that death, caused by the injection of these salts in the blood, is due to the sudden arrest of the heart, before the cessation of the respiratory movements. In his investigations upon the physiological action of the salts of potassium, and of sodium, P. Guttman (*Berliner Klinische Wochenschrift*, 1865, Numbers

3435 and 3436,) examined more closely than any one had before him the mode of action of these compounds. According to his observations, all the salts of potassium (with the exception of bromide and iodide, and some salts, the acid of which is poisonous in itself) have an equally toxical property, and all act directly upon the heart. They diminish, at first, the force and frequency of its pulsations, and they effect its arrest by paralysis of the muscular action of the organ, which, once at rest, does not react under electrical excitement. The greatest difference between the physiological action of the salts of potassium and the salts of sodium is, that the latter exercise no influence upon the heart—as Blake has already observed (*Edinburgh Medical Journal*, 1839).

Upon these two points—poisonous properties, and intimate action of the salts of potass—our experiments with the sulphate of potass, alone, confirm the data already given.

What the action of the salts of magnesium, and, particularly, of the sulphate of magnesia, may be, has not been investigated very thoroughly, at least to our knowledge; and we should hesitate to accept the opinion of M. Rabuteau (*Etude experimentale sur les effets physiologiques des fluorures et composes metalliques en general; These de Paris:* 1867), who, after one experiment with the chloride of magnesium, concluded that this metal is as entirely harmless as sodium.

SULPHATE OF POTASS.

The experiments we are about to report are designed to show the action which the sulphate of potass exercises upon the heart and the muscles. To evince clearly the action upon the heart, it is necessary to experiment upon an animal, withdrawn from all causes that can modify the rythm, and the frequency of the pulsations of this organ. To accomplish that, we have employed the method of double poisoning. We have made our experiments upon dogs subjected to the influence of curare, until the excitability of the motive organs by electricity is completely destroyed. By this procedure, and maintaining an artificial respiration, we can expose the heart to view, and observe, directly, the troubles arising from the introduction of a foreign substance in the circulation.

EXAMPLE I. July 8th, 1868. Poisoned a small-sized bitch, by injecting under the skin some centigrammes of curare, in solution. After a short time, signs of poisoning manifested themselves. Artificial respiration was maintained for an hour. At that time, the sciatic nerve laid bare was no longer excitable. The heart was exposed; the pulsations were very regular, but sufficiently frequent. (The two pneumogastrics were severed.) At 9 h. 55 m., two cubic centimètres of a solution of sulphate of potass of 10e (that is, 20 centigrammes of sulphate of potass) were injected carefully in the left crural vein.

The phenomenon which suddenly manifested itself in the region of the heart was a diminution, a kind of hesitancy, in the pulsations.

This diminution, which was only transient, was succeeded, almost immediately, by a greatly accelerated action; there were, as far as one could judge, a-third or a-half more strokes than before the injection.

Then came a time when the pulsations were disturbed. They presented an accelerated series, separated by moments of cessation—a series of vigorous throbbing, followed by feeble action. Then, the pulsations became less and less frequent, and were replaced by the partial and, as it were, vermicular contractions of the ventricle, which became distended, in a measure, by the blood, which it could no longer expel. 10 h. 1 m. Complete cessation of the heart in diastole. The blood of the heart, collected in a saucer, coagulated with great rapidity.

This experiment has been repeated three times with identical results. With dogs of small size it was sufficient to introduce two and three cubic centimètres of the solution of sulphate of potass to produce the trouble of the heart, and its complete arrest, in some minutes. In another series of experiments, we have practiced injecting sulphate of potass in the blood of frogs.

The following is the process at which we have arrived:—

We make the injection in the arterial system. In order to do that, we expose the terminal part of the aorta and its bifurcation into the two iliac arteries; and it is in one of these arteries that we introduce a fine canula and make the injection.

The canula of the syringe is introduced in the artery, very near the aorta, in such a manner that when the liquid is injected, by the eighth of a drop, from the syringe of Parvas, that which passes immediately into the artery of the opposite side diffuses itself throughout the corresponding posterior member, and is returned immediately to the heart by the venous system.

This method has the advantage, at the same time, of isolating one of the members of the animal (the posterior member, in the artery of which the injection is made) from the action of the substance.

EXAMPLE II. 2 h. 26 m. 15 centigrammes of the solution of sulphate of potass, of 10e, are injected in the left iliac artery of a green frog, whose heart beats 70 times in a minute.

While the injection is made very carefully, slight fibrile contractions are observed in the muscles of the thigh, then in those of the calf, and some trembling of the toes of the right side. These contractions, which impart a little rigidity to the member, cease in about two minutes. The limb, released and extended, does not retract.

2 h. 30 m. The heart is observed; 20 pulsations a minute. The ventricle remains a comparatively long time in diastole. Its contraction is unequal; some parts of the ventricle close, while others do not empty themselves. The auricle contracts with difficulty and irregularity.

The frog, being released, executes some energetic movements of the right hind foot; the left remains extended and paralyzed. Feebleness of the anterior parts, which are somewhat depressed, sensibility preserved throughout.

2 h. 38 m. 50 pulsations of the heart; more regular; the auricle contracts with more power; repose of the heart more or less prolonged from time to time. Motion begins to return in the right posterior member; and the thigh flexes itself gently upon the body.

2 h. 50 m. 60 beats of the heart; full and regular.

4 h. 10 m. Normal condition of the frog:—right posterior member very active; left posterior member (vessels ligated) grows paralyzed.

EXAMPLE III. The arteries and lumbar nerves of a large frog are severed; and, at 12 h. 52 m., 20 centigrammes of the solution of sulphate of potass are injected in the left iliac artery. During the process of injection, the fibrile contractions, which, at that time, usually manifest themselves in the right foot, are not apparent.

1 h. The lumbar nerves of the right side are excited by employing the forceps of Pulvermacher. No contractions in the muscles of the foot. The same excitant directed against the muscles of the foot fails equally to provoke any contraction.

On the contrary, contractions are plainly evident when the forceps are applied to the muscles of the left foot (vessels ligated). Besides, the animal executes some energetic movements with this foot.

1 h. 5 m. and 1 h. 10 m. Same results—non-excitability of the muscles on the right; excitability on the left.

1 h. 20 m. The muscles of the right thigh begin to contract. This is shown likewise by electricizing the lumbar nerves. The part is nevertheless paralyzed.

1 h. 35 m. Spontaneous movements in the right hind foot, which has regained its energy, in a great measure.

Among the frogs, the difficulties arising in the heart's action are only transient, and have never occasioned the arrest of that organ. The reason is, the doses of sulphate of potass (1 to 2 centigrammes) are too small.

The same hesitation, the same irregularities in the cardiac pulsations, are observed, either when the frogs are well or previously poisoned by curare. Only one phenomenon is lacking, in every instance, among the frogs under the influence of curare, that is, the muscular fibrile contraction, that, in the healthy frog, almost invariably manifests itself in the posterior member, where the liquid of the injection passes immediately.

SULPHATE OF SODA.

The almost absolute harmlessness of injecting the salts of soda in the blood enables us to determine whether the sulphate of soda, injected in the veins, purges, as when given by the intestine.

A priori, and, by analogy, it seems to be thus. It appears perfectly natural that the same as an emetic injected in the veins produces vomiting, Glauber salts should purge. It is undoubtedly upon these data, only, that cathartic properties have been attributed to the sulphate of soda injected in the blood.

EXAMPLE IV. July 27th, 1868: 11 A.M. 12 grammes of sulphate of soda dissolved in 40 grammes of water were injected in the crural veins of a dog weighing 10 kilogrammes. Immediately after the injection, and even before it was terminated, the respiration of the animal growing embarrassed became difficult and wheezing. This trouble continued a little time, and, presently, respiration was natural. The animal released and placed on the ground went about the laboratory, appearing a little more feeble in the posterior region, and after a time laid down. He was seized with a slight trembling or shivering, which continued nearly five hours.

At six o'clock in the evening, that is, after a period of seven hours, the animal was observed and had no evacuation, neither solid nor liquid. He had remained all this time lying in the same position.

The next day (July 28th), at 8 A.M., the animal appeared quite recovered from the injection: from the depression which at first ensued, he has become sportive and fawning. There was in the kennel only one scanty evacuation, half liquid, half solid, bilious, of recent date.

July 29th. Solid evacuations.

July 31st. The animal has had quite profuse hemorrhage in the night. The wound in the thigh still bleeds easily. No reunion by first intention of the wound, the edges of which are gaping and scarcely swollen.

This experiment repeated several times shows:—

1st. That the sulphate of soda, when injected in the veins, does not purge.

2d. That by the diminution of the coagulability and plasticity which it occasions in the blood, the salt of soda disposes to hemorrhages, and retards the work of cicatrization.

SULPHATE OF MAGNESIA.

EXAMPLE V. September 17, 1868. 15 cubic centimètres of a solution, 20 parts sulphate magnesia to 100 parts water, were injected in the right crural vein of a vigorous dog, weighing 8 kilogrammes. At 2 h. 16 m., during the injection, the animal was restive, its respiration accelerated, then became feeble, and, presently, was carried on by short and abrupt contractions of the diaphragm.

2 h. 22 m. New injection of 15 cubic centimètres of the solution. Complete arrest of respiration. Artificial respiration maintained by means of bellows.

No reflex action of the eyes, upon touching the cornea. No movements of the foot or tail, when pinched severely. The heart beats very regularly.

2 h. 30 m. The left sciatic nerve was galvanized by means of the apparatus of Legendre and Morin: very feeble contraction of the muscles of the member. The muscles under direct excitement contracted well. No reflex movements of the eyes.

2 h. 35 m. Galvanization of the sciatic nerve; no movement of the foot. Muscles excitable; no reflex action; pupils largely dilated.

2 h. 40 m. Spontaneous respiration commenced in the diaphragm; but weak and insufficient.

2 h. 45. Sciatic nerve became slightly excitable. Abdominal respiration stronger and more regular (artificial respiration discontinued.) No reflex action of the eyes or feet, when pinched hard.

2 h. 55 m. Feeble effort to close the eyelids, upon irritation of the cornea.

3 h. Galvanization of the sciatic nerve; decided motion in the foot. Strong and full respiration, which indicated that the animal perceived the uncomfortable sensation, caused by excitement of the nerve.

3 h. 20 m. Voluntary movement of the head and hind feet. Reflex action of the eyes partially returned. Pupils less dilated.

3 h. 30 m. General tremor commenced in the anterior parts, and extended itself to the hind feet, in proportion as motion re-

turned there. It ceased about 4 o'clock: at that time the animal had regained all its movements, but its gait was still feeble and uncertain.

September 18th. Two bilious liquid evacuations in the night.

September 22d. The animal had recovered partially. There was no immediate reunion of the wounds in the neck and thigh; the edges were gaping, and nearly free from tumefaction. On pressure of the wound, a bloody serum exuded.

September 25th. The wounds commenced to suppurate, especially that of the neck, which was in a more advanced state of cicatrization.

EXAMPLE VI. Frog. 25 centigrammes of a solution, one part sulphate of magnesia to three parts water, was injected in the left iliac artery, at 6 h. 55 m. Injection finished at 7 h. 5 m.

7 h. 15 m. Complete paralysis of voluntary and reflex action, save in the left posterior member, preserved by the ligation of its vessels. Lumbar nerves of the right side not excited by the forceps of Pulvermacher. Muscles excited directly. Regular action of the heart.

The next day, the frog has regained full power of motion.

One fact results from our experiments with the sulphate of magnesia, it is: that injections of this salt in the blood are poisonous. We cannot admit, then, with M. Rabuteau, that the salts of magnesium are as harmless as the salts of sodium. In our experiments with the sulphate of soda, we have injected, always, from 10 to 15 grammes, and sometimes 20 grammes of this salt, without producing death. On the contrary, 2 to 6 grammes of sulphate of magnesia, according to the size of the animals, have invariably sufficed to occasion an almost frightful death.

This first point established, let us seek to ascertain the mode of intimate action of the sulphate of magnesia. In consideration of these facts, only, paralysis of voluntary and reflex action, bordering upon loss of the excitability of the motive nerves, with preservation of the action of the muscles, which follow the introduction of the substance in the blood, among dogs; the same effects, with greater preservation of the sensibility and

movements of the isolated member, among frogs. One cannot refrain from comparing the action of sulphate of magnesia with the characteristic action of curare, and the poisons of the motive nerves. Without doubt, the alteration that the sulphate of magnesia originates in the blood should be taken into consideration; but this alteration would not give an explanation of the phenomena which immediately follow the injection. The diminution of the coagulability and plasticity of the blood can only, as with sulphate of soda, account for the later phenomena, that is, the consecutive hemorrhages and delay occasioned in the cicatrization of the wounds.

Experiment V. shows, finally, that if the sulphate of magnesia injected in the blood sometimes produces liquid and bilious evacuations, properly speaking, it does not purge, as when given in the intestine.*

In the course of experiments made in April, 1867, to study the toxical action of different metalic salts, I introduced a very small quantity of crystallized sulphate of magnesia under the skin of a frog's back. The animal became gradually enfeebled: at the end of an hour, there was no movement, either spontaneous or reflex, in the different parts of the body. It was the same when sulphate of potass was introduced, hypodermically; but sulphate of soda had no analogous effect. The chlorhydrate of ammonia, on the contrary, occasions, also, an abolition of spontaneous and reflex action, excepting that of the heart, but after having produced a more or less transient tetanic condition. In many cases, the effects of these salts have been dissipated completely at the expiration of a few hours.—[A. VULPIAN.

*Since this article was sent to the press, we have learned that M. Rabuteau and M. A. Moreau have each arrived at the same result as ourselves, relative to the non-carthartic action of sulphate of soda injected in the blood.

Correspondence.

KNOXVILLE, TENNESSEE, *April 21, 1869.*

PROFESSOR DAVIS:—The weather since last fall has been mild. Only during the month of December was it cold, as that term is used in this latitude. At one time the mercury went down to 5° above zero, and a little snow fell. At no time during the whole winter has the ground been covered with snow.

There was no sickness worth mentioning, till, in January, when measles began to prevail. In February, the disease became epidemic; and whole families were prostrated at one time. Most cases were of a simple type, during the month of February, but, in March, was observed, in many cases, a tendency to bronchial and pneumonic complications, with sore-throat and a continued type of fever. Intestinal worms, in a few cases, figured quite prominently, in connection with measles. I may say in this connection, that children are more affected by worms here than I had found to be true in Michigan or Illinois.

February 21st, I was called to see a boy of 14; light complexion and hair.

Besides finding the usual indications of measles, ascertained that for some months previous he would scream at night, and get up in a condition of somnambulism, at times uncontrolable. The tongue was covered towards the base with a thick, creamy coat, but red and pointed at the tip. Although the indications of measles were plain, still, I diagnosed worms to be an immediate cause of the noisy demonstrations during sleep. Prescribed hyd. cum. creta, gr. x.; pulv. Doveri, gr. xij.; santonin, gr. viij.; M. F. pulv. No. 4, sig., one every three hours, to be followed with castor oil and oil turpentine.

Calling next morning, found that a great number of worms (lumbricales) had been voided from the rectum, besides vomiting some, and even two or three had crawled from his mouth while asleep. To take pulv. Doveri, P. R. N.

23d.: *10 A.M.* Found eruption fully developed upon the face and neck, and the usual catarrhal symptoms. Ordered

teaspoonful doses every four hours, of the following mixture:—

℞. Spts. Nit. Dulc, ---------- ℥j.
Syr. Ipecac, } āā. ---------- ℥iij.
" Scilla, }
Tr. Sang. Canad. ---------- ℥ij.

This boy continued to void worms for some days; and the wild demonstrations gradually ceased to occur. Convalescence seemed established, but, March 11th, he was attacked with pleuro-pneumonia upon the right side. Expectorants and blistering were resorted to, and in a week or more he was about again.

March 2d. Called to attend a boy of 13, laboring under the usual prodromic signs of measles. From some of the symptoms, suspected worms; and, accordingly, gave santonin, with hyd. cum. creta; with the effect to bring some eight or ten away. The eruption came out in due time; and he recovered without any complications.

One case occurred, superadded to common, continued fever. A little girl of 7, with light skin and flaxen hair, was taken, March 8th, with a convulsion. Was called immediately, and found that the fit had subsided; but reaction was coming up rapidly. The child had complained of slight indisposition for two or three days; tongue coated; skin dry; and urine high colored. The fever continued steadily from day to day, when, on Friday, the 12th, the eruption of measles came out finally. The usual catarrhal symptoms were present, but not severe. The fever progressed steadily through the month; the pulse running as high as 140 in a minute, with hot skin, scanty and very high colored urine; tympanitic abdomen about the 21st day, with profuse and very offensive stools. The tongue was very red and clean; appetite wanting; emaciation and extreme debility. The treatment was mainly expectant, the indications from day to day suggesting the remedies.

To-day, April 7th, she is improving finely.

April 14th. Was called to see a child of a year old, that had just recovered from a mild form of measles, laboring under capillary bronchitis. The secretion was so copious as to almost

produce suffocation; the difficulty of expectoration being enhanced by the very ropy mucus. By the use of small doses of hyd. cum. creta and pulv. Doveri, alternated with syr. ipecac and tr. ginger, continued two days, the mucus became more liquid, the discharges from the bowels very copious, and all the suffocation symptoms relieved. The tendency to such relapses seems to be caused by an excess of fibrin in the blood, which is obviated at once by the use of mercury and other antiphlogistic remedies. The difference between this locality and that of the valley of the Mississippi is very noticeable, especially to one who had for many years observed diseases in no other region of country.

The air upon this elevated range is always pure, and the depressing effects of miasma wholly unknown. Convalescence from attacks of disease seems to be rapid, and health soon restored. Relapses are more uncommon, from the fact that the *vis medicatrix naturæ* has less to contend with.

I will conclude by giving the following description of cases coming under my observation:—

BELL'S PARALYSIS.

March 23d, 1869. A man called at my office laboring under facial paralysis. The left eye was wide open, and could not be closed. On winking the right eye, the left remained unmoved. He could neither blow, whistle, nor spit. In the act of laughing, the left side of the face was not moved, giving quite a ludicrous appearance.

On opening the mouth, his features were awry. On examining the throat, the arch formed by the pillars of the fauces was larger on the affected side, the uvula inclining to the sound side. Articulation somewhat deficient. The eyeball perfect in its movements. Slight difficulty in mastication, with an inability to move the morsel from the left cheek. Slight deafness in the left ear.

The affection was first noticed after riding in a railroad car, with the left cheek exposed to a current of air from an open window. I have had no opportunity as yet of attempting a cure.

HERNIA OF UNUSUAL SIZE.

Charlotte Freeman, mulatto, *æt.*, about 35, lived with her master in S.W. Virginia till the fall of 1863, when she came to this place. Last summer she consulted me in reference to a "rupture." I found an immense left inguinal hernia, reducible, but not capable of being kept up, by reason of the size of the sac. Advised the use of a suspensory apparatus; and saw no more of her till a few days ago. I was called to prescribe for her child, and took occasion to obtain a history of the case.

At about the age of 20, she first noticed a tumor in the left groin, about as large as a hen's egg. Her master procured a truss, which enabled her to keep about without any trouble. When it was worn out, her master refused to get another; and soon it began to enlarge. When the war commenced, she says it was about as large as a "pint bowl."

During the war, a kick from a mule at one time, and from a cow, while milking, at another, made her much worse.

She says, the last mentioned accident brought it to the present size, some idea of which will be conveyed by the following measurements:—

Circumference at the largest point 20 inches. From the upper margin of the ring around the tumor, longitudinally, to the opposite side or edge of the ring, 24 inches. The most dependent point of the tumor is four inches above the patella; and the woman is fully the average in height. The tumor is egg-shaped, with the larger end downwards.

On lying down, the whole contents of the tumor will readily return to the abdominal cavity, except what appears to be a portion of omentum adherent to the sac, anteriorly. This portion causes an appearance of bulging, and it looks as though one or more of the internal coats of the sac had been ruptured. This was caused, she says, at the time of receiving the blow from the cow. When the intestinal contents of the sac are within the abdomen, the hypertrophied integuments and this supposed omental adhesion make a mass as large, nearly, as a cocoanut. This prevents a truss being worn; and there is no way for the poor woman to do when in the erect position but to

produce suffocation; the difficulty of expectoration being enhanced by the very ropy mucus. By the use of small doses of hyd. cum. creta and pulv. Doveri, alternated with syr. ipecac and tr. ginger, continued two days, the mucus became more liquid, the discharges from the bowels very copious, and all the suffocation symptoms relieved. The tendency to such relapses seems to be caused by an excess of fibrin in the blood, which is obviated at once by the use of mercury and other antiphlogistic remedies. The difference between this locality and that of the valley of the Mississippi is very noticeable, especially to one who had for many years observed diseases in no other region of country.

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let the whole hernial mass *swing*. She goes about and labors hard, with but little apparent inconvenience. Both rings seem merged into one large opening about two inches across.

She has had nine children, four of them since the tumor attained its present size.

F. K. BAILEY, M.D.

Proceedings of Societies.

ALUMNI ASSOCIATION.

Minutes of the annual meeting of the Alumni Association of Chicago Medical College:—

The members of the Alumni Association of Chicago Medical College met in the lower lecture room of the College at 7½ P.M., March 22, 1869.

The President, Dr. H. P. Merriman, occupied the chair.

The attendance was larger than expected.

Minutes of previous meeting read and approved.

Some amendments were made to the Constitution and By-Laws.

Interesting papers were read from Drs. Herbert Harris, D. A. Sheffield, J. F. Kelsey, A. C. Corr, G. Wheeler Jones, Stacy Hemmenway, and others.

The President's address was then listened to with deep interest by all; a copy of which, on motion, was requested to be furnished for publication in the *Chicago Medical Examiner*.

The following are the officers elected for the ensuing year:—

President, J. S. SHERMAN, M.D., Chicago.

1st Vice-President, J. G. FREDIGHE, M.D., Chicago.

2d Vice-President, G. H. FULLER, M.D., class '69.

Secretary and Treasurer, S. A. MCWILLIAMS, M.D., Chicago.

The Alumni were then notified of the Treasurer's willingness to receive their annual dues.

No farther business appearing, the meeting adjourned.

At a subsequent meeting, the Association voted fifty dollars

for a prize to that member of the Association who should present the best essay on some medical or surgical topic. Dr. N. S. Davis offers to increase the sum to one hundred dollars. The subject of the essay to be left to the option of the competitor. All are members who have paid their yearly dues of one dollar. Any Alumnus not now a member can become one by sending his name and one dollar to the Secretary, which it is hoped every one will do.

The Committee on competing essays consist of N. S. Davis, M.D.; E. Andrews, M.D.; H. A. Johnson, M.D.; and W. Hay, M.D. Each essay must be designated by a device or motto, and must be accompanied by a sealed envelope bearing the same device or motto, and containing the name and address of the author. The envelope belonging to the successful essay will be opened and the name of the author announced at the next annual meeting of the Association, also, at the next annual commencement of the College in 1870. The competing essays must be sent in to the Secretary of the Association on or before the 15th February, 1870. It is expected that the prize essay and others of marked value will be published in pamphlet form and furnished to the members of the Association.

S. A. McWILLIAMS, *Secretary and Treasurer,*
166 State St.

CHICAGO MEDICAL SOCIETY.

FRIDAY EVENING, March 5, 1869.

The Society was called to order, and in the absence of President Marguerat, Dr. W. Kersham was appointed to fill the chair *pro tem.*

The Secretary read the minutes of last meeting, which were duly approved.

Drs. Groesbeck and Wickersham recommended Dr. J. R. Groesbeck for membership. Referred to Board of Censors.

The Board of Censors reported favorably in the case of Dr. Lyman Ware. Society proceeded to ballot, Dr. Ware being unanimously elected a member of the Society.

Dr. Paoli asked permission to read a letter from a member of the Legislature in relation to the Medical Bill, to the effect that the bill would not pass this session for want of time, as it had at that time not been reported on.

Dr. Groesbeck remarked that he was sorry the Society had taken any action to promote the passage of the bill, and hoped they would cease all further action in the matter.

Under call for report of cases, Dr. Paoli reported case of a lady on Erie St., who supposed herself suffering from inflammation of the bowels. Dr. found no inflammation, but retroversion of the uterus. The woman had some accident five years ago. Lately she has suffered a great deal from leucorrhœa, which the Doctor thinks is the great cause of the retroversion. Under the use of tonics, iron, etc., the patient is doing well.

Dr. Paoli asked of the Society what diseases were most prevalent in the city.

Dr. Davis reported the cases of two girls, aged respectively 10 and 15 years, who had suffered from scarlatina in a mild form. In one week, the youngest complained of pain in the back. There was general anasarca, continuing four days. Urine scanty and high colored. She took bitartrate, nitrate, and acetate of potassa and digatalis. Notwithstanding only one passage of urine was effected for 24 hours, which was half blood. This was soon followed by symptoms of giddiness, dilatation of the pupils, and quick, successive convulsions, continuing for 18 hours.

Everything taken into the stomach was rejected. Bromide and iodide of potassium was given without effect, together with vapor baths aud fomentations. Still convulsions continued. I ordered nitrate of potassa and calomel, each 5 grs., to be given every hour until two doses were taken, then the interval lengthened to every two hours, alternated with a mixture of chloroform and tinct. cannabis Indica. Four powders were given before the bowels were moved, evacuation being copious. Then withdrew the calomel and gave nitrate potassa and pulv. Doveri āā gr. ij., every four hours, continuing the chloroform and cannabis Indica. Child is now well.

In the other case, the girl of 15 years, I could get nothing to act on the bowels until I finally prescribed three gtts. oleum tiglii, part of which was rejected. It, however, produced a copious evacuation, which relieved her. For one week she seemed quite well, when she was again seized with violent convulsions, which continued for 24 hours. Dr. Byford saw her and ordered a vapor bath and some other remedies. It is now one week since she has had a convulsion. These are the only cases of scarlet fever that have been followed by anasarca and convulsions that I have met with for a considerable period of time. As regards the prevalence of disease, the Doctor stated that there is a great deal of pertussis, but not sufficient scarlet fever to be called an epidemic. Has noticed some cases, however, which assumed a diphtheritic form.

Dr. Groesbeck reported fatal cases of scarlet fever, the first a little boy of 3½ years. At an early stage of the disease there appeared on both tonsils white patches which extended to the mouth. The patches, however, soon cleared off, and I looked for convalescence. After one week had elapsed, the tonsils began to swell, and in due time I opened one tonsil, considerable pus escaping. In a day or two later there was severe hemorrhage from the sloughing surface of the tonsil, and the child died.

The other case, a boy of 4½ years, was taken with the same symptoms, the same exudation appearing on the tonsils and in the mouth. When convalescence was expected in this case they became swollen and edema of the lungs supervened.

Dr. Paoli thinks that when you find blood present in the urine in acute Bright's disease following scarlatina, that it is a favorable symptom. The Doctor wished to know if any member had used cannibis Indica alone as an antispasmodic.

Dr. Davis says there was no effects of antispasmodics in the cases referred to until after free elimination had been produced, but thinks the cannibis Indica would have acted favorably alone.

Dr. Davis says he saw Dr. A. A. Dunn four days before his death, and that Dr. Andrews had seen him several days previ-

ously, as he was attending him. Says that Dr. Dunn seemed to think he was suffering from neuralgia in the cicatris, on his forehead, although the pain was somewhat diffused. The Doctor seemed wearied and tired, and had been taking morphine and quinine while going about. Nearly a week before his death, he said he felt as though his end was coming. I visited patient that day. He grew rapidly worse. Pulse not accelerated. Very moderate increased heat of head. Went steadily, although quite rapidly, into a dull, drowsy condition, but if roused would talk. Pupils a little dilated. When I was again called I could not rouse him sufficient to converse, although he seemed to recognize me. Pulse soft and compressible. Pupils contracted and but little affected by light. Bowels inactive. Gave an enema. Red and congested condition of the nases and fauces, but throat was not swollen. He continued to sink into a stupor, and the third day after I saw him he died. There is no doubt in my mind but what there was disease of the anterior lobes of the brain, as we could not get him to swallow, the second day after I saw him. At the time of death there seemed to be edematous infiltration about the glottis. Dr. Davis also spoke highly of the deceased, and recommended that a committee of three be appointed to adopt resolutions and send a copy to the family of the deceased and copies to the city papers.

Dr. Fitch said that he has been acquainted with Dr. Dunn for twenty years, and all that Dr. Davis has said is true. Remarked that the Doctor did not serve in the army as a surgeon but as a Captain in the line. During the service he received a shell wound of the forehead, which continued to discharge for two years and only healed about one year ago. Dr. F. was also inclined to think the wound was the predisposing cause of his sickness, as there was a fracture of the cranium.

Dr. Holmes said Dr. Dunn gave a long report of his own case to the Society some time ago, and stated that spicula of bone had been discharged from the nostril.

Dr. Fitch said that he thought Dr. Dunn had seemed depressed and dull ever since he received the wound, not appearing like the same man to him.

On motion, a committee was appointed, consisting of Drs. Davis, Fitch and Groesbeck, to report resolutions in the case of Dr. Dunn at the next meeting of the Society.

After transaction of some miscellaneous business the Society adjourned.

CHICAGO, FRIDAY EVENING, March 12, 1869.

Society was called to order, President Marguerat in the chair.

Secretary Macdonald read the minutes of last meeting, which were duly approved.

Board of Censors reported favorably in the case of Dr. J. R. Groesbeck. Society proceeded to ballot, Dr Groesbeck being unanimously elected a member of the Society.

The Secretary read the resignation of Dr. J. E. Ray, which after some discussion was duly accepted by the Society.

Then proceeded to the discussion of the "Hypodermic Application of Medicinal Substances."

The discussion was opened by Dr. Ingalls, who gave an interesting history concerning its discovery. Dr. Wood, of Scotland, in 1850, introduced this method of applying medicines, but it has been proven that Dr. Brainard, of Chicago, used a syringe constructed on the same principle, and manufactured for him by Tieman, as early as 1845, and used it in the treatment of spina bifida, hydrocephalus, ascites, etc., and that he wrote several articles on the subject about that time. Hence we can justly say that the system of the hypodermic application of medicines originated in Chicago. The Doctor also considered the different complaints in which it was most applicable.

Dr. Marguerat said that he was glad to hear Chicago had a claim to such a valuable discovery, but did not think it would supercede the administration of drugs by the old way. Says he noticed a case of death from erysipelas, following a large injection of quinine, but thinks there is no doubt but what it is of great service in the treatment of neuralgia, dysmenorrhœa, etc., and believes its effects more permanent than when otherwise administered. Said he was called in the case of a woman who was suffering from hysterical insanity, the result of ill

treatment by her husband. She had been a raving maniac for three weeks; could not give her medicine, as it took three or four to hold her in bed. He injected morphine, and in five minutes the patient passed into a quiet sleep.

Dr. Paoli remarked that he had no doubt but what the time will come when the hypodermic application of medicine will be approved by the profession generally. In cholera time, said he derived more benefit from the administration of morphine in this way than by any other. Has had no experience with other alkaloids.

Dr. Foster asked what proportion of morphine was most applicable for hypodermic action.

Dr. Fitch said he had but little experience in this mode of treatment, except as recommended by Dr. Brainard in the treatment of varicose veins and hydrocele. Generally introduces 15 or 20 drops of the liquid, first pinching up a fold of the skin before inserting the point of the instrument. Says Dr. Anstie, in *Braithwaite's Retrospect*, considers atropine of great value when the disease is located in the pelvis or abdomen, and strychnia in gastralgia. Dr. F. reported a case of abortion which occurred two months ago, when the patient was in great pain, restless and uneasy, and could take no food. Gave $\frac{1}{75}$ gr. atropine with great success; after second dose was introduced there was dilatation of the pupil.

Dr. Davis remarked that he had not much experience in the use of the hypodermic injection. Used it in one case of facial neuralgia with permanent benefit. Patient has had no attack for a year. Used it in several other cases with temporary benefit. Thinks when the solution contains too much acid then it is apt to be followed by ulceration or abcess.

Dr. Ingalls thinks that what Dr. Davis has said is true, and is of the opinion that all acids should be discarded from injections, always using distilled water. (Magendie's solution morph. gr. xvj.; aqua ℥j.)

Dr. Bogue thinks there is great benefit from the addition of from 1-40 to 1-80 of a gr. of atropine to about a-half of a dose of morphine, as it extends the effects of the anodyne from 12

to 16 hours. Thinks this method very useful given in the cramps of cholera.

Society passed to miscellaneous business.

The committee appointed to report resolutions in the case of Dr. Dunn submitted the following, which was duly accepted by the Society:—(See Resolutions in April number.)

Society adjourned.

FRIDAY EVENING, April 16th, 1869.

Society called to order by the President, Dr. R. G. Bogue.

Reports of cases being the order of the evening, Dr. N. T. Quales reported the following interesting case of rupture of uterus:—

March 9th, 1869, at two o'clock P.M., I was called to tend Mrs. L., a strong, healthy Irishwoman, aged 28, in her third confinement—two previous having been instrumental deliveries—told me she had been sick since five o'clock in the morning; pains having been strong and regular; membranes ruptured half an hour before my arrival, and about 15 or 20 minutes later (the pains having continued with increased severity) she felt something "give way," and the pains almost instantly ceased.

On examination, I found the os uteri fully dilated, the cord down, but no parts presenting. By introducing the hand, I found the promantory of the sacrum unusually prominent, and by carrying the hand farther, it came in contact with the umbilicus, and I made out the position as transverse, the abdomen presenting—the head to the right, and the feet to the left, side of the mother. In passing my hand (right) round in order to get hold of the feet, I found a longitudinal rupture of the posterior wall of the uterus, above the promontory of the sacrum, about 2½—3 inches in length, with intestines protruding. My feelings at this discovery can better be imagined than described. I despatched a messenger for my friend Dr. Paoli.

With the conviction that immediate action offered her the best chance, I decided to turn and deliver at once. I brought down the left foot, and, by gentle traction, succeeded in delivering her, in course of 15 or 20 minutes, of a fullborn, healthy

male child—apparently stillborn, yet, after some patient effort, I had the satisfaction of seeing vitality restored.

By gentle traction on the cord, the placenta was expelled in about three inches. There was now some considerable flooding. I at once gave ℥ij. of the fl. extract of ergot (Duffield's), introduced my hand and replaced the protruding intestines, and, by friction and pressure over the abdomen, caused firm contraction of the uterus before I withdrew my hand. In course of 15 minutes, I repeated the ergot, in order to obtain continued contraction; and having succeeded in this, I applied a moderately tight bind and napkin to the ulva—waited another half hour—the contraction of the uterus continued. I gave gr. ij. of opium, and left orders to call me if anything unusual should occur. At eight o'clock in the evening, I called and found the uterus somewhat dilated, the patient otherwise comfortable. Ordered gr. ij. of opium at once, and to be followed with gr. j. doses of opium every two or three hours, if she was awake.

March 10th, at eight o'clock A.M., I found her feverish and uneasy. She had slept about three hours during the night, and passed urine twice. Pulse 112 per minute; respiration somewhat labored; tongue dry; considerable tympanites and tenderness about the uterine region; lochial discharges suppressed. Ordered tinct. verat. vird., gtt. 4, every three hours, and pulvis opium and dydrorg. submureas, of each, gr. j., every two hours, with turpentine stupes over the abdomen: saw her at noon, when she was more comfortable. At eight o'clock in the evening, the pulse was 108 per minute; the tenderness about the abdomen subsided. Ordered gr. ij. of opium, at bedtime.

March 11th, at eight o'clock A.M., pulse 106 per minute; no great pain; had slept several hours during the night, and taken some nourishmeut. Treatment continued, with longer intervals between the doses. Also, injection into the uterus of solution of acid carbol., gtt. vj. to the ℥j. of warm water, three times a day.

March 12th. Symptoms much aggravated; pulse 120 per

minute; tongue dry; lympanites and tenderness increased; had passed a restless night. Ordered blister, 12×12, over the abdomen, to be left on for six hours. Internally, I ordered quinia sulph., gr. j.; pulvis opium, gr. ss., every four hours, to alternate with tinct ferrsh, gtt. xx. On removing the blister, a large, warm flax-seed poultice was applied to the abdomen, and a full anodyne at night.

March 13th. Much improved; little pain besides the soreness from the blister; lympanites greatly subsided; pulse 112 per minute; tongue moist; bowels moved for the first time since confinement; locheal discharges reestablished; took considerable nourishment during the day.

March 14th. Improving; pulse 90 per minute; tongue moist; no pains, and but little lympanites: treatment continued.

March 27th. Sits up, and can walk across the floor. Secretion of milk liberal.

At the present writing, April 14th, 1869, both mother and child are doing well; the mother performs her ordinary household duties, yet complains of occasional soreness over the abdomen.

Dr. G. C. Paoli, in remarking on the foregoing case, gave the following statistics of ruptures of the uterus:—

In the Kingdom of Wurtenburg, in 219,535 births was observed six ruptures of the uterus, being only one in 36,539. Madam La Chapel observed in Paris Hospital only one in 20,000 births.

Professor Joccry Elipse observed two ruptures in 20,056.

Dr. Erringman, of Prague, from 1827 to 1833, observed seven ruptures in 18,085 cases.

Dr. Cedershold, of Sweden, from 1830 to 1831, observed two ruptures in 2334. Churchill, of England, in 42,768 there was 75 cases, making 1 in every 657 which occurred in Dublin.

Verbal reports of cases were made by Drs. Groesbeck, Paoli, Mitchell, and others.

Dr. T. D. Fitch, one of the surgeons to the Cook County Hospital, reported a case of death from the inhalation of chloroform, which occurred that day at the Hospital.

The patient was an adult, native of Sweden, and a laborer. Several months since he suffered a severe injury of his foot and ankle, by a waggon-wheel passing over it. The injury had resulted in extensive destruction of soft parts by suppuration, and caries of the bones of the ankle.

He was admitted to the Hospital only a few days since; and a consultation of the surgeons of the institution resulted in the decision that amputation was necessary. The patient had been kept on good diet and tonics during the short time he had been in the Hospital, and had taken a glass of wine immediately before entering the operating room. No disease had been detected in the organs of respiration or circulation; and the patient was himself anxious to have the operation performed. The chloroform was administered on a napkin, held over the nose and mouth, not so close as to prevent the free access of atmospheric air.

When the inhalation had progressed from one to two minutes, and ten or twelve inspirations had been taken, an unusual sound was noticed, and the napkin immediately removed. A slight tremor of rigidity or spasm passed over the muscular system; three or four slight efforts at inspiration took place at long intervals, and then ceased entirely with complete muscular relaxation. The heart, however, continued to beat feebly for more than half an hour after the respiration ceased. The most strenuous efforts were made to revive the patient by artificial respiration, and otherwise, for more than one hour. The account of Dr. Fitch was corroborated by Drs. Bevan and Bogue, who were present and assisted in the efforts to restore the patient.

A minute and careful *post mortem* was made the following day, but no disease of the organs of circulation or respiration were found, and no congestion or even fulness of the vessels of the brain.

After the transaction of some miscellaneous business the Society adjourned.

Book Notices.

A Practical Treatise on the Diseases of Women. By T. Gaillard Thomas, M.D., Professor of Obstetrics and Diseases of Women and Children, in the College of Physicians and Surgeons, New York; Physician to the Bellvue Hospital; etc., etc., etc. With 225 Illustrations. Second Edition, revised and improved. Philadelphia: Henry C. Lea. 1869. 627 pages. For sale by S. C. Griggs & Co.

It is but a few months since we noticed and commended to our readers the first edition of this work. This edition is published in excellent style, and has been carefully revised by the author. It is an excellent practical treatise on the diseases of the non-pregnant female.

Editorial.

Explanation.—On the 28th of April, when we left home to attend the meeting of the American Medical Association, the present number of the Examiner was so far printed, and the matter all furnished for its completion, that we supposed it would be sent to the subscribers promptly, as usual, during the first week in the month. Returning on the 15th of May, we were much surprised to find it still in the printer's hands. The delay had been occasioned solely by some misunderstanding in relation to the cuts with which the number is illustrated.

Homœopathy.—We have received a pamphlet of 100 pages, embracing four lectures on this subject, by A. B. Palmer, A.M., M.D., Professor of Pathology, Practice of Medicine, etc., in the Medical Department of the University of Michigan. These lectures embrace a very interesting and valuable exposition of the doctrines of homœopathy, as it was and is, and would be very useful for reference in the library of the physician, or even for general circulation among the people. Copies may be had at S. C. Griggs & Co., of this city. Price, 30c.

ILLINOIS STATE MEDICAL SOCIETY.—We are informed by the Committee of Arrangements that the members of the Illinois State Medical Society will commence in the Common Council Room, in the City Hall building, at 10 o'clock A.M., of Tuesday, May 18th, 1869. This is an excellent and convenient place in which to meet, and every arrangement will be made to promote the interests of the Society.

CORRESPONDENCE.—Just after the last pages of our April number had gone to press, we received, in the form of advanced sheets, a copy of very interesting letters, written by Wm. O. Baldwin, M.D., President of the American Medical Association, and by G. C. Nott, M.D., formerly of South Carolina. The letters were written in excellent spirit, but related to matters bearing on the meeting of the Association this Spring, and, hence, could be of little use at this date.

CHICAGO MEDICAL SOCIETY.—At the recent annual meeting of this Society, the following officers were elected, and committees appointed for the ensuing year:—*President*, R. G. Bogue; *Vice-President*, Ernst Smidt; *Secretary and Treasurer*, Hiram Wanzer. *Sanitary Committee*, Drs. Quales, Fenn, and Hutchinson. *Censors*, Drs. Fitch, McDonnell, and Holmes. *Committee on Ethics*, Drs. Davis, Trimble, and Margueret. *Committee on Microscopy*, Drs. Mitchell, H. M. Lyman, and Danforth. *Committee on Questions for Discussion*, Drs. Paoli, Hildreth, and Adolphus.

ADAMS COUNTY MEDICAL SOCIETY.—The Adams County Medical Society, at its November meeting, adopted a revised Fee Bill, together with the following:—

In cases where consultations have been had, or where two or more physicians have been in attendance, the physician having the case in charge shall embody in his bill the fees of the counsel or assistants, and account therefor to the same, paying the full amount or such proportion of the whole bill as may be collected.

I. *Resolved*, That the foregoing table of fees be adopted as the Fee Bill of this Society.

II. *Resolved*, That the virtuous and industrious poor shall be attended by the members of this Society as cheerfully as the rich, and for such compensation as they are able to make.

III. *Resolved*, That every member of this Society shall keep a record of all patrons who are able, but who neglect or refuse to pay for medical services, and report the name and residence of the same at every meeting; and that all such persons be afterwards required, by all the members, to pay for services in advance.

IV. *Resolved*, That our fees are due as soon as the services are rendered, and that all members of the Society shall make prompt collections, and give the community to understand that we are entitled to the same consideration in this respect that is claimed by merchants, artisans, and laborers.

V. *Resolved*, That this Fee Bill, and these Resolutions, with the names of all the members of the Society appended thereto, be printed in a suitable form, and that every member be required to have a copy of the same conspicuously placed in his office, that our patrons may be fully apprised of its contents and conditions.

VI. *Resolved*, That members who disregard this Fee Bill and these Resolutions shall be liable to the same penalties that are attached to a violation of the Code of Ethics.

Money Receipts to April 26.—Drs. J. F. Kelsey, $3; D. A Sheffield, 3; S. J. Starr, 1; Daniel Gard, 3; John D. Wood, 3; D. S. Jenks, 3; Wm. Dougall, 3; A. G. Jones, 3; D. LaCount, 1.50; Harrison Rodbaugh, 3; J. B. Cloud, 3; R. Winton, 3; V. L. Hurlburt, 3; Theodore Hoffman, 3; Jessie H. Foster, 3; W. M. Chambers, 3; C. S. Hamilton, 3; J. H. Reynolds, 3; L. Brookhart, 3; Murphy and Wharton, 6.

The Discovery of a Minute Fossil Horse.—Professor Marsh, of Yale College, has discovered in the tertiary deposits of Nebraska, the minutest fossil horse yet obtained. It is only two feet high, although full grown. This makes the seventeenth species of fossil horse discovered on this continent.—*Boston Medical and Surgical Journal.*

MORTALITY FOR THE MONTH OF MARCH, 1869:—

The sanitary superintendent submitted the following report of mortality for the month of March, 1869:—

The number of deaths during the month of March was 353, with 41 premature and still births.

COMPARISON.

Deaths in March, 1869,--353	Deaths in March, 1868,--380	Decrease,--- 27
Deaths in Feb., 1869,----------382	Decrease, ----------	20
Males, ----------207	Females, ----------146	Total, ----------353
Single, ----------267	Married ---------- 86	Total, ----------353
White, ----------349	Colored, ---------- 4	Total, ----------353

NATIVITIES.

Bohemia, ----------	3	France,----------	3	Switzerland, -------	2
Canada, ----------	8	Germany,----------	33	Sweden, ----------	8
Native Chicago, ----	76	Holland, ----------	2	Scotland, ----------	3
Foreign " ----	95	Ireland,----------	37	Unknown,---------	2
U. S., other parts,---	70	Italy,----------	1		
England, ----------	5	Norway, ----------	5	Total, ----------	353

MORTALITY BY WARDS FOR THE MONTH.

Ward.	Mortality.	Pop. in 1868.	One death in	Ward.	Mortality.	Pop. in 1868.	One death in
1---	6	9,094	2,273½	14---	24	14,839	742
2---	12	13,074	769	15---	28	21,078	958 1-10
3---	22	15,076	793½	16---	21	15,465	736 3-7
4---	18	17,796	936	County hos.	13		
5---	19	16,033	943½	Accidents,	11		
6---	18	13,083	769 1-10	Mercy Hosp.	5		
7---	28	25,492	772½	Suicides,	1		
8---	14	15,813	790 4-7	St. Jo. Orph. Asylum	1		
9---	27	19,297	689⅛	Poisoning,	9		
10---	20	12,925	1,435 7-9	Marine hosp.	1	Woman's home,	1
11---	17	14,340	1,024 1-5	Home for the Friendless,	2	Hosp. for Women & Children,	1
12---	24	17,485	603				
13---	15	11,164	507½				

Total, ---------- ~~374~~ 358 45

REPORT OF SANITARY SUPERINTENDENT.

The sanitary superintendent also submitted his yearly report, of which the following is a brief synopsis:

The total number of deaths was 5,807. The sexes were, males, 3,191; females, 2,616. The condition was, married, 1,222; single, 4,585. Color, white, 5,742; colored, 65. In the way of nativities, Chicago suffers to the extent of 3,144. The greatest number of foreigners were from Germany, 671; the next greatest number, 510, being natives of Ireland. The mortality by wards shows the largest number to have been in the Seventh Ward, and the smallest in the First Ward. The total number of births was about 8,000. The number of females born during the year was much less than males.

At the last annual meeting of the Medical Society of the State of New York, Dr. March read a paper entitled "Spontaneous Lithotomy" giving an account of a case in which a large-sized vesical calculus was discharged through an ulceration in the perinæum.—*Medical Record.*

A Singular Disease.—Before the London Obstetrical Society, Mr. Heckford recently exhibited the generative organs of a child aged ten months, in which the vagina was enormously dilated, and occupied by villous growths of a medullary character. The rectum, bladder, and urethra were normal. The os uteri opened into the upper wall of the vaginal sac. The disease had lasted for about four months; and the child died shortly after its admission into the East London Children's Hospital.—*Medical Record.*

The Half-Yearly Compendium.—The number of this periodical for January has now appeared. It is full of the choicest selections on all branches of medical science, and should be in the hands of every physician. No synopsis of professional works, or articles, at all compare with it, either in the diversity of sources consulted, or the number of valuable facts accumulated.

The annoying delay in the publication of this number will be avoided in future. The next number may be confidently looked for by July 10th.—*Med. and Surg. Reporter.*

A Valuable Collection for Sale.—A large and superior collection of original illustrations, by the late Prof. Türck, of Vienna, comprising 777 water-color paintings of life size, and illustrating the diseases of the larynx and pharynx, as seen with the laryngoscope or from pathological specimens, is for sale by the family of the Professor. The paintings were executed by Drs. Elfinger and Heitzmann in the first style of the art. A history of each case is annexed. Will not some member of the profession so far render himself a benefactor of his brethren as to purchase the collection, that we may have it among us. F. H. B.—*Boston Med. and Surg. Journal.*

Catarrhus Vesicæ.—This disagreeable chronic complaint is often very obstinate; it may therefore, be stated that M. Mallez has found the following solution injected into the bladder very efficacious: Water ten ounces; tincture of iodine, forty-five drops; iodide of pottassium, fifteen grains. When the

pain is very annoying, add fifteen grains of the extract of belladonna to the above. He has also employed carbolic acid, nitrate of silver, and hyposulphite of soda with advantage.—*Lancet, Jan. 2, 1869.—Medical News and Library.*

A Superior Liquid Glue.—A liquid glue, far superior to mucilage, may be made by dissolving glue in an equal quantity of strong hot vinegar, adding a fourth of alcohol and a little alum. This will keep any length of time when placed in closed bottles, and will glue together horn, wood, and mother of pearl. —*Scientific American.*

Diabetes Cured by Peroxide of Hydrogen.—Mr. J. J. Bayfield (*British Medical Journal*) reports a case of diabetes cured by peroxide of hydrogen. He commenced with half-drachm doses of the ethereal essence of the peroxide, and gradually increased it to three drachms a day.—*The Med. Record.*

A Surgical Prize.—The Surgical Society of Paris has just announced the subject of the Labor.e prize (£48), to be awarded in January, 1870:—"Point out, by the aid of clinical facts, the actual value of supramalleolar amputation from the following points of view:—1. The mortality consequent upon the operation. 2. On the different ways of performing it. 3. The usefulness of stumps in the act of walking. 4. The artificial limbs best calculated for these stumps."—*Med. Record.*

Treatment of Diseased Gums.—A writer in the *London Lancet* recommends the following treatment of diseased gums: —The teeth should be washed night and morning with a moderately small and soft brush; after the morning ablution, pour on a second toothbrush, slightly damped, a little of the following lotion, and apply it to the affected parts:—Carbolic acid, one scruple; rectified spirits of wine, two drachms; distilled water, six ounces. By the use of this preparation, suppurative action is kept under, and the gums get firmer and less tender. —*The Medical Record.*

The Last Wonder of the Spectroscope.—The spectroscope, which, since its invention eight years since, by Bunsen and Kirchoff, has contributed so much to the progress of science, was used with signal success in observations of the recent total eclipse of the sun, by English and French parties, in different parts of Asia. By this means, the nature of the protub-

erances on the rim of the solar disc, observed in former eclipses, has been satisfactorily explained. They are found to be columns of incandescent gas, possibly containing hydrogen.—*The Medical Record.*

Calcification of Tooth Pulp.—Recently Miss L., aged 21, of nervous, sanguine temperament and general good health, called for consultation in reference to her two superior central incisors. About four years before, they had received a blow which partially loosened them; they were quite sore and painful for a few weeks, and then recovered so far as to be used with a tolerable degree of comfort. The left tooth soon changed somewhat in color; and the presumption was that the pulps of both were devitalized. Two years and a half after the accident, the teeth began to change position, the cutting edges being thrown forward against the upper lip, disfiguring the mouth very much.

In consequence of this, together with constant soreness, which had existed for several months, it was decided to remove them, which being done nothing particular was observable, further than had been shown before extraction, the left tooth showing some change of color, but the right, none from that of a healthy tooth.

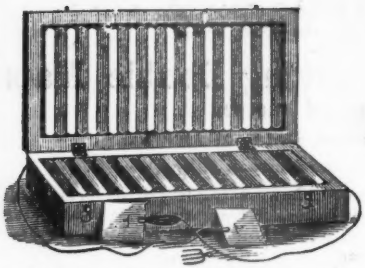
Through inadvertence, the crown of the latter, a day or two after extraction, was broken into three or four pieces, breaking off at the neck of the tooth; the pulp was found to be completely calcified, entirely filling the pulp chamber; it did not break; the fragments of the crown parted from it, leaving it standing perfect, tightly imbedded in the canal of the root so firmly that it can not be drawn out with the fingers. This is the only case of the kind we have ever seen, and is a very marked illustration of a process upon which very little attention has been bestowed, and about which not much is known.

We were recently presented by Dr. Cushing, of Chicago, with a section of tooth in which the calcification of the pulp was complete; but it was perfectly united to and continuous with the dentine all round the walls of the pulp chamber, which was obliterated thereby.

This is clearly a calcification of the pulp, and not a deposition merely of calcific matter upon the walls of the chamber, for the structure of the pulp is clearly seen in the tissue. We shall have sections of each mounted for microscopic examination, when we shall perhaps have something further to say in reference to them.

HISTORY OF VACCINATION.—The *Pall Mall Gazette* states that the Russian Government has offered a prize of 3000 roubles (£400) for the best history of vaccination, by way of celebrating the hundredth anniversary of the introduction of that practice into Russia by the Empress Catharine II. The prize is open to all European competitors, and the history may be written in any modern European language.—*Boston Med. and Surg. Journal.*

WEBSTER'S UNABRIDGED—ILLUSTRATED.—In all the essential points of a good dictionary, in the amplitude and selectness of its vocabulary, in the fullness and perspicacity of its definitions, in its orthœpy and (*cum grano salis*) orthography, in its new and trustworthy etymologies, in its elaborate, but not too learned, treatises, of its introduction, in its carefully prepared and valuable appendices,—briefly, in its general accuracy, completeness, and practical utility,—the work is one which *none who read or write can henceforth afford to dispense with.—Atlantic Monthly.*



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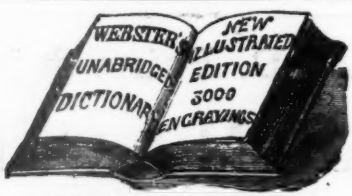

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CHICAGO MEDICAL COLLEGE.

The regular Annual Lecture Term in this Institution will commence on the first Monday in October, and continue until the fourth Tuesday in March following. Clinical Lectures *daily* throughout the term.

FACULTY.

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